

B¹
cont (iii) specifically binding to polyclonal antibodies generated against SEQ ID NO:1,
SEQ ID NO:3, SEQ ID NO:16 OR SEQ ID NO:18.

B² 19. (once amended) An isolated monomer of claim 17, wherein the monomer has
an amino acid sequence of human or mouse Slo3.

B³ 21. (once amended) An isolated monomer of claim 17, wherein the monomer has
an amino acid sequence of SEQ ID NO:1, SEQ ID NO:16 or SEQ ID NO:18.

45. (new) An isolated monomer of claim 17, wherein the monomer has a
calculated molecular weight of about 126 kDa.

46. (new) An isolated monomer of claim 17, wherein the monomer is a subunit of
a homomeric potassium channel.

sub
C¹ 47. (new) An isolated polypeptide monomer of a pH sensitive potassium channel,
the monomer:

B⁴ (i) having a unit conductance of approximately 80-120 pS when the monomer is in a
functional tetrameric form of a potassium channel and is expressed in a *Xenopus* oocyte;

(ii) having increased activity above approximately intracellular pH of 7.1; and

(iii) encoded by a nucleic acid that specifically binds under stringent hybridization
conditions to a nucleic acid encoding an amino acid sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ
ID NO:16 or SEQ ID NO:18, wherein the hybridization reaction is incubated at 42°C in a buffer
comprising 50% formamide, 5x SSC, and 1% SDS, and washed at 65°C in a buffer comprising 0.2x
SSC and 0.1% SDS.

48. (new) An isolated monomer of claim 47, wherein the monomer has an amino
acid sequence of human or mouse Slo3.

49. (new) An isolated monomer of claim 47, wherein the monomer has an amino
acid sequence of SEQ ID NO:1, SEQ ID NO:16 or SEQ ID NO:18.

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50. (new) An isolated monomer of claim 47, wherein the monomer has a calculated molecular weight of about 126 kDa.

51. (new) An isolated monomer of claim 47, wherein the monomer is a subunit of a homomeric potassium channel.

Sub C2
52. (new) An isolated polypeptide monomer of a pH sensitive potassium channel, the monomer:

(i) having a unit conductance of approximately 80-120 pS when the monomer is in a functional tetrameric form of a potassium channel and is expressed in a *Xenopus* oocyte;
(ii) having increased activity above approximately intracellular pH of 7.1; and
(iii) encoded by a nucleic acid that specifically binds under stringent hybridization conditions to a nucleic acid sequence of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:17 or SEQ ID NO:19, wherein the hybridization reaction is incubated at 37°C in a buffer comprising 40% formamide, 1M NaCl, and 1% SDS, and washed at 45°C in a buffer comprising 1x SSC.

24 Cont.
53. (new) An isolated monomer of claim 52, wherein the monomer has an amino acid sequence of human or mouse Slo3.

54. (new) An isolated monomer of claim 52, wherein the monomer has an amino acid sequence of SEQ ID NO:1, SEQ ID NO:16 or SEQ ID NO:18.

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55. (new) An isolated monomer of claim 52, wherein the monomer has a calculated molecular weight of about 126 kDa.

56. (new) An isolated monomer of claim 52, wherein the monomer is a subunit of a homomeric potassium channel.
